

Design of Self-Heating Containers Using Sodium Acetate Trihydrate for Chemical Energy - Food Products

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Abstract : Long ago heating of food was only related to fire or electricity. Heating and storage of consumer foods were satisfied by the use of vacuum thermo flaks, electric heating cans and DC powered heating cans. But many of which did not sustain the heat for a long period of time and were impractical for remote areas. The use of chemical energy for heating foods directed us to think about the applications of exothermic reactions as a source of heat. Initial studies of calcium oxide showed desirability but not feasible because the reaction was uncontrollable and irreversible. In this research work we viewed at crystallization of super saturated sodium acetate trihydrate solution. Supersaturated sodium acetate trihydrate has a freezing point of 540 C (1300 F), but it observed to be stable as a liquid at much lower temperatures. Mechanical work is performed to create an active chemical energy zone within the working fluid, when crystallization process is initiated. Due to this the temperature rises to its freezing point which in turn heats the contents in the storage container. Present work endeavor to design a self-heating storage container is suitable for consumer dedications.

Keywords : crystallization, exothermic reactions, self-heating container, super saturation, vacuum thermo flask

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